REMARKS

Claims 1-20 were pending. Claims 3-4 and 8-9 were allowed. Claims 13-14 were objected to. Claims 1-2, 5-7, 10-12, and 15-20 stand rejected. Claims 1-2, 5-7, 10, 13-14, 16, and 18-20 were amended. Claim 15 was cancelled. Claims 1-14 and 16-20 remain in the application.

The Examiner has not responded to the Supplemental Information Disclosure Statement filed in the USPTO March 11, 2004 (see attached postcard). Review of the references cited therein, including U.S. Patent No. 3,647,949, is respectfully requested.

Claims 13-14 stand objected to as being dependent upon a rejected base claim, but allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims. Claims 13-14 have been so rewritten.

Claims 1-2, 5-7, 10-12, 16-17, and 20 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Schmidt (US 5,754,536).

Claim 1 has been amended to state:

> 1. A method of analyzing a digital image channel comprising the steps of:
>
> extracting a signal from the digital image channel; and
>
> using the extracted signal to determine whether the digital image channel is an interpolated digital image channel or a non-interpolated digital image channel, wherein said interpolated digital image channel is derived from and has a higher sampling rate than a source digital image channel.

Claim 1 is supported by the application as filed, notably, at page 4, lines 22-24.

The rejection argues similarities between interpolation in speech, as disclosed in Schmidt, and interpolation of digital images:

> "Whether (1) to detect sound portion of speech signal by detecting sound portions of speech signals in each input trunk and by combining only the detected sound portion to form new digital signals so that the new digital signal has a smaller number of output channels than the number of input trunks or (2) to reduce the size of image by skipping certain number of image pixels so that the new digital image signal has a smaller number of output pixels than the input image, they both change sequence/location of

the digital signal to reduce the number of digital signal. It is clear that the specific interpolation technique developed for one signal (speech or image) cannot be applicable to the other without modification. However, the use of interpolation in both signals, speech and image (image reduction), has the same goal, which is to reduce the number of digital signal by changing sequence/location of the digital signal." (office action, page 2, emphasis added)

The "interpolation" of the rejection would reduce the sampling rate of an output image relative to an input image. This is not how the term "interpolation" is used in the application.

A glossary of a text in the relevant art states a definition: "interpolation. Estimation of the value of an image at points between those which are actually known." (*Practical Digital Image Processing*, R. Lewis, Ellis Horwood Series in Digital and Signal Processing, New York, (1990), page 246)

The application follows this definition.

"In other words, the values of the image at locations between the original samples must be determined. This process of determining the value of an image signal at locations which are not coincident with the original samples of the image is called interpolation." (application, page 1, lines 14-17)

"The digital image channel $p(x,y)$ is an interpolated image if it has been derived from some other source digital image channel $m(x,y)$ and if the sampling rate of $p(x,y)$ is higher than the sampling rate of $m(x,y)$. (application, page 22, lines 22-24)

Claim 1 has been amended to incorporate a definition of "interpolation" as the term is used within the application. Claim 1 states: "said interpolated digital image channel is derived from and has a higher sampling rate than a source digital image channel."

Schmidt does not teach or suggest an interpolated digital image channel that is derived from and has a higher sampling rate than a source digital image channel. It can be further argued that Schmidt teaches against Claim 1, in that it is a goal of Schmidt, according to the Office Action, "to reduce the number of digital signal by changing sequence/location of the digital signal",

Claim 1 requires use of the extracted signal to determine whether the digital image channel is interpolated (to a higher sampling rate) or non-interpolated. The rejection relies upon the speech detector of Schmidt to disclose or suggest this feature. The speech detector, in Schmidt, is described as detecting speech portions in a non-interpolated signal, that is, a signal of speech portions and pauses. (Schmidt, col. 1, lines 17-19; col. 10, lines 61-62) How would the speech detector discriminate an interpolated speech channel derived from and having a higher sampling rate than a source speech channel from non-interpolated speech? What would motivate one of skill in the art to create such an interpolated (higher sampling rate) speech channel despite the other teachings of Schmidt? Having created such a channel, what would motivate one of skill in the art to then try to detect it using a detector directed to talkspurts?

The Office Action has failed to address the teachings of the prior art that are contrary to the rejection. U.S. Patent No. 3,647,949 to Closs et al, entitled, "VIDEO MULTIPLEXING SYSTEM" (hereafter "Closs") was discussed in the previous amendment and cited in the Supplemental Information Disclosure filed concurrently with the previous amendment. Closs describes a particular speech interpolation system, in which signals are multiplexed and "silent intervals" in subscriber speech are not transmitted. Closs then states:

> "In the transmission of video signals, where each single signal contains essential information content and where a new connection may be needed for each picture element, such a system operated by a central control cannot be employed." (Closs, col. 1, lines 53-57)

This teaching contradicts the position taken by the rejection. Where does Schmidt provide motivation sufficient to overcome this teaching of Closs?

Claims 2 and 5 depend from Claim 1 and are allowable on that basis and as follows.

Claim 2 states:

> 2. The method as claimed in claim 1 wherein said using further includes determining an estimated factor of interpolation from said signal, when said digital image channel is an interpolated digital image.

Claim 2 is supported by the application as filed, for example, beginning at page 5, line 29 through page 6.

Claim 2 requires determining an estimated factor of interpolation of an interpolated digital image from the extracted signal. The rejection apparently argues that the process of removing pauses from a signal would make it inherent or obvious what factor of interpolation was applicable. Whether or not this is true for Schmidt, this is no teaching or suggestion as to how to determine an estimated factor of interpolation from an extracted signal.

Claim 5 is supported and allowable on the same basis as Claim 2.

Claim 15 was listed on the summary as being rejected, but was never argued in the current Office Action. Claim 15 has been cancelled.

Independent Claim 21 was added, which states:

> 21. A method of analyzing a digital image channel comprising the steps of:
>
> extracting a signal from the digital image channel; and
>
> using the extracted signal to determine whether the digital image channel is an interpolated digital image channel or a non-interpolated digital image channel, wherein said interpolated digital image channel has an integer factor of interpolation.

Claim 21 is supported by the application as filed, notably, at page 10, line 22 to page 11, line 4. Claim 21 requires that the interpolated digital image channel has an integer factor of interpolation. The term "factor of interpolation" is defined in the application:

> "The factor of interpolation, *N*, refers to the ratio of the sampling rate of the output image to the sampling rate of the input image." (application, page 1, lines 17-19)

The signal reducing "interpolation" of Schmidt does not provide an integer factor of interpolation.

Claim 6 is supported and allowable on the grounds discussed in relation to Claim 1.

Claims 7 and 10-12 are allowable as depending from Claim 6 and as follows.

Claim 7 is also supported and allowable on the grounds discussed above in relation to Claim 2.

Claim 11 states:

11. The image processing system as claimed in claim 6 further including means for sending a message to a user based on determining whether the digital image channel is an interpolated digital image channel or a non-interpolated digital image channel.

The rejection of Claim 11 states:

"As per claim 11, Schmidt teaches determining whether the digital image channel is an interpolated digital image channel or a non-interpolated digital image channel (column 10, lines 55-64). Schmidt does not teach details on sending a message to a user based on this finding. Schmidt clearly performs different functions based on this finding. Mere incorporation of sending a message to a user at this point is not deemed patentably significant and lacks any criticality."

The rejection of Claim 11 is not supported by Schmidt and no other support for the rejection is presented. The cited portion of Schmidt describes an operation in a communications satellite 44 (see Figure 2). Where is the user? If the rejection proposes sending a message to a user on the ground as to whether a channel is interpolated or non-interpolated, then where is there an additional communications channel to carry the message? Where is there motivation to add such a channel and to send such a message? What could the user do with such a message?

Claim 16 states:

16. A digital image analysis method comprising the steps of:

extracting a signal from the digital image; and

using the extracted signal to determine whether the digital image has been interpolated to a higher sampling rate or is non-interpolated.

Claim 16 is allowable on the same grounds as discussed above in relation to Claim 1. Claim 16 further requires extracting a signal from a digital image and using that signal to determine if the image has been interpolated to a higher sampling rate or is non-interpolated. Schmidt teaches the multiplexing of plural voice channels. (Schmidt, col. 1, lines 60-65; col. 2, line 66 to col. 3, line 1; col. 4, lines 36-38) Where in Schmidt is there a signal comparable to an interpolated digital image (a singular image not a channel of multiplexed images)? (Note the

reference to the FDMA/TDMA/DSI controller in the cited portion of Schmidt at col. 10, line 63.)

Claims 17-20 are allowable as depending from Claim 16 and as follows.

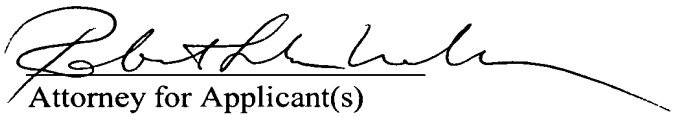
Claims 18-20 were amended to conform with the changed language of Claim 16.

Claims 17 and 20 is also allowable on the grounds discussed above in relation to Claim 2.

It is believed that these changes now make the claims clear and definite and, if there are any problems with these changes, Applicants' attorney would appreciate a telephone call.

In view of the foregoing, it is believed none of the references, taken singly or in combination, disclose the claimed invention. Accordingly, this application is believed to be in condition for allowance, the notice of which is respectfully requested.

Respectfully submitted,



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Enclosures: Copy of Supplemental IDS, PTO-1449
Copy of stamped postcard
Copies of four cited references